OPERATING SUMMARY

1974

CITY OF

BURLINGTON - DRURY LANE

WATER POLLUTION CONTROL PLANT

Ontario

MINISTRY OF THE ENVIRONMENT

MINISTER
Honourable William G. Newman

DEPUTY MINISTER
E. Biggs

ASSISTANT DEPUTY MINISTER
REGIONAL OPERATIONS
J. Barr

REGIONAL OPERATIONS DIVISION

DIRECTOR, CENTRAL REGION
P. Cockburn

MANAGER, UTILITY OPERATIONS
A. Thomas

BURLINGTON-DRURY LANE

WATER POLLUTION CONTROL PLANT

operated for

THE CITY OF BURLINGTON

by the
MINISTRY OF THE ENVIRONMENT

1974 ANNUAL OPERATING SUMMARY

prepared by
Plant Performance Unit
TECHNICAL SERVICES BRANCH
T. Cross, Director

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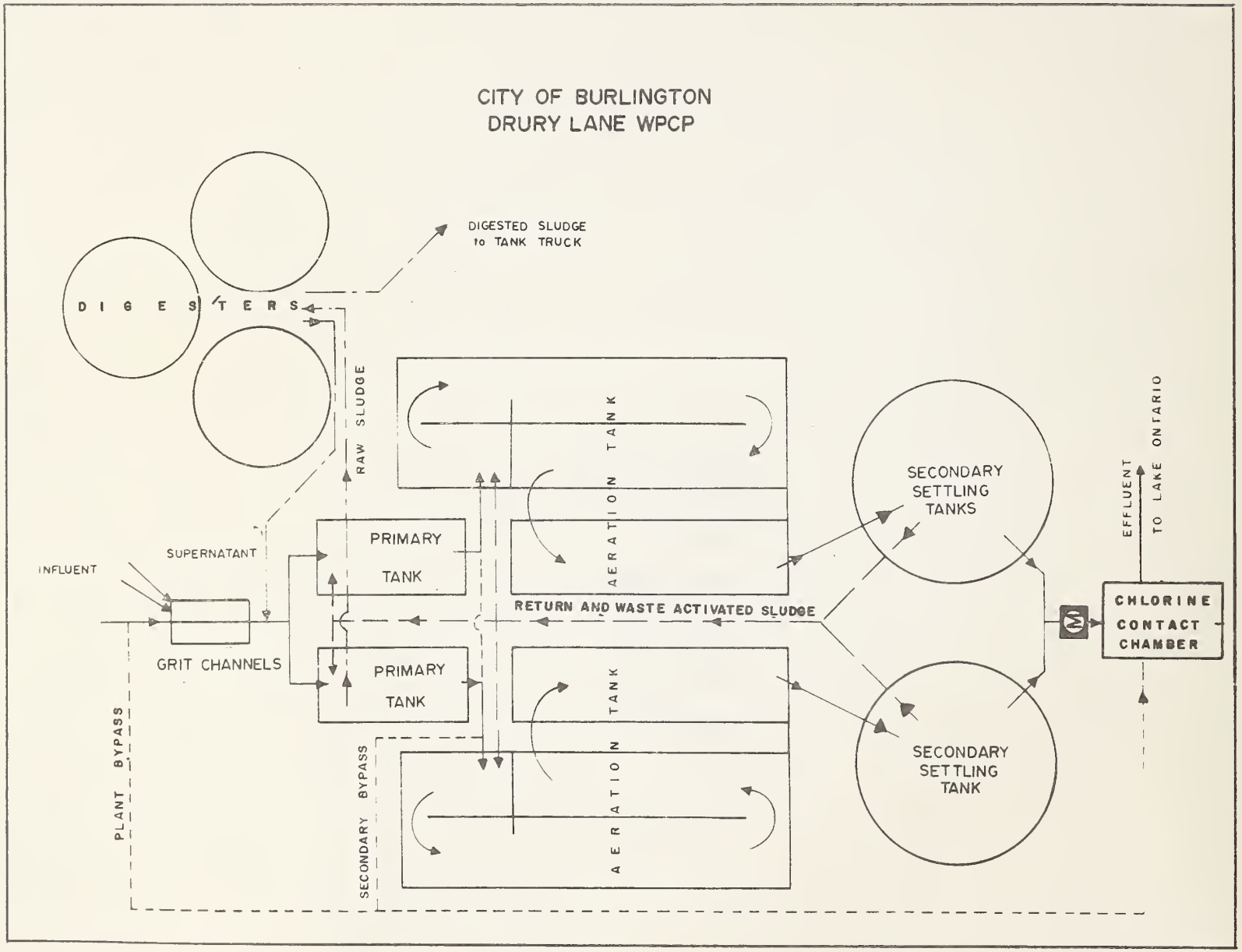

CITY OF BURLINGTON
DRURY LANE WPCP
DIGESTED SLUDGE
to TANK TRUCK
DIGESTERS
RAW SLUDGE
AERATION TANK
SECONDARY
SETTLING
TANKS
EFFLUENT
TO LAKE ONTARIO
SUPERNATANT
INFLUENT
PRIMARY
TANK
RETURN AND WASTE ACTIVATED SLUDGE
CHLORINE
CONTACT
CHAMBER
GRIT CHANNELS
PRIMARY
TANK
AERATION TANK
SECONDARY
SETTLING
TANK
PLANT BYPASS
SECONDARY BYPASS
AERATION TANK

DESIGN DATA

PROJECT City of Burlington
Drury Lane WPCP

PROJECT NO. 2-0051-60

TREATMENT Activated Sludge

DESIGN FLOW 2.5 mgd

DESIGN POPULATION 30,000

BOD - Raw Sewage 200 mg/l
- Removal 90%

SS - Raw Sewage 180 mg/l
- Removal 90%

PRIMARY TREATMENT

Screening

1" bar screens

Grit Removal

Type: Grit channels
Retention: 0.8 min

Primary Sedimentation

Type: Walker Process
Size: Two 49.3' x 18' x 12.25' (135,700 gal)
Retention: 1.3 hr
Loading: Surface, 1400 gal/ft^2/day
Weir, 17,100 gal/ft/day

SECONDARY TREATMENT

Aeration Tanks

Type: Diffused air; triple-pass
Size: Two tanks, each with
2 passes 118' x 18' x 10.7'
1 pass 85.5' x 18' x 10.7'
(833,000 gal. total)
Retention: 8.0 hours

Air Supply

One Sutorbilt - 1500 cfm
Two Roots-Connerville - 750 cfm

Diffusers - (each tank)

1) 132 Schumacher Brandel tubes in first two passes

2) 41 Spargers on 2' centres in third pass

Secondary Sedimentation

Type: Rex Unitube Tow-Bro
Size: Two 50' dia x 10.6' swd (260,000 gal)
Retention: 2.5 hr
Loading: Surface, 1000 gal/ft^2/day
Weir, 8500 gal/ft/day

CHLORINATION

Type: Kent

Chlorine Contact Chamber

- in outfall

OUTFALL

- to Lake Ontario

SLUDGE HANDLING

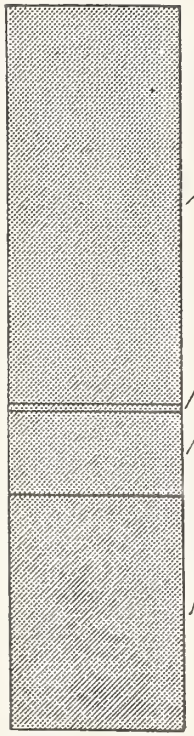
Digestion System

Type: Two-stage

Primary --
Size: Two 40' dia tanks (313,000 gal total)
Loading: 2.7 lb/ft^3/mo

Secondary --
Size: One 40' dia tank (143,000 gal)
Loading Total: 1.9 lb/ft^3/mo

ANNUAL COSTS



1974 OPERATING COSTS

SALARIES & WAGES	55 %
EMPLOYEE BENEFITS	%
TRANSPORTATION & COMMUNICATIONS	.5 %
SERVICES	12 %
SUPPLIES & EQUIPMENT	33 %
AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS	0 %
TRANSFER PAYMENTS	0 %
OTHER TRANSACTIONS	0 %

YEARLY OPERATING COSTS

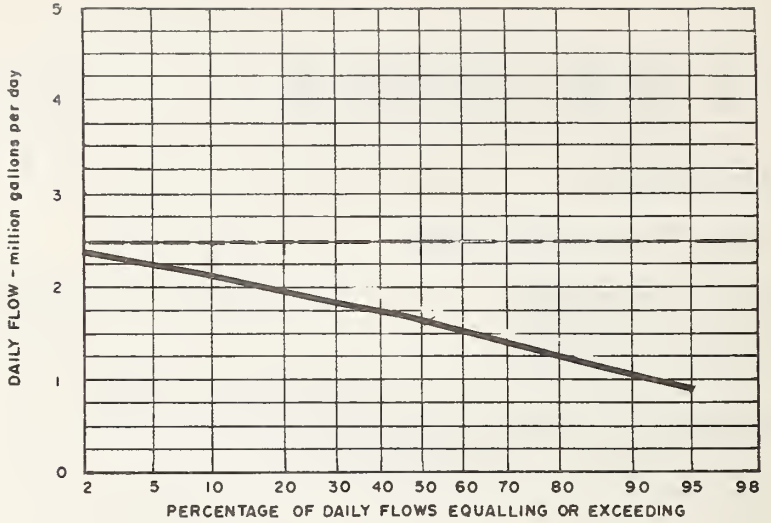
YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS $/M.G.	UNIT COSTS ¢/lb BOD
1969	595	42, 152	71	4
1970		38, 417		
1971	584	43, 733	75	3
1972	732 *	37, 791	52	3
1973	632	38, 002	60	4
1974	582	42, 639	73	7

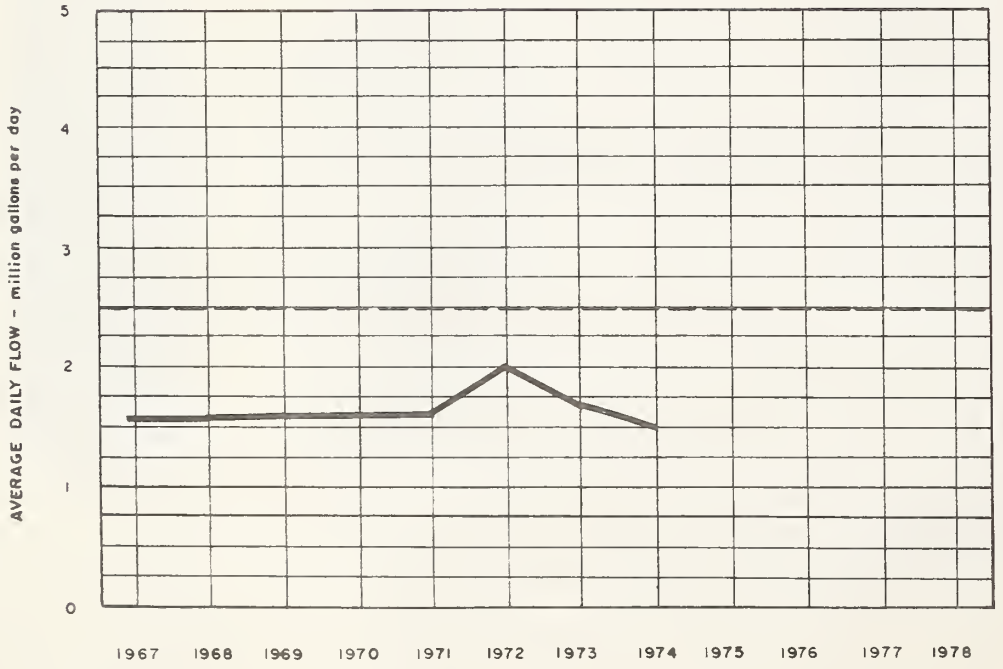
OPERATING EXPENDITURES

Regular Staff	$ 23243	$
Casual (Unclassified) Staff		
TOTAL SALARIES AND WAGES		23243
TOTAL EMPLOYEE BENEFITS		
TOTAL TRANSPORTATION AND COMMUNICATIONS		200
Insurance	2287	
Sludge Haulage	2358	
Repairs and Maintenance	271	
Other Services	20	
TOTAL SERVICES		4936
Machinery and Equipment	816	
Chemicals	1196	
Utilities	11054	
Other Supplies and Equipment	1194	
TOTAL SUPPLIES AND EQUIPMENT		14260
TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS		
TOTAL TRANSFER PAYMENTS		
OTHER TRANSACTIONS		
GRAND TOTAL	GRAND TOTAL	$ 42639

PROCESS DATA

FLOWS



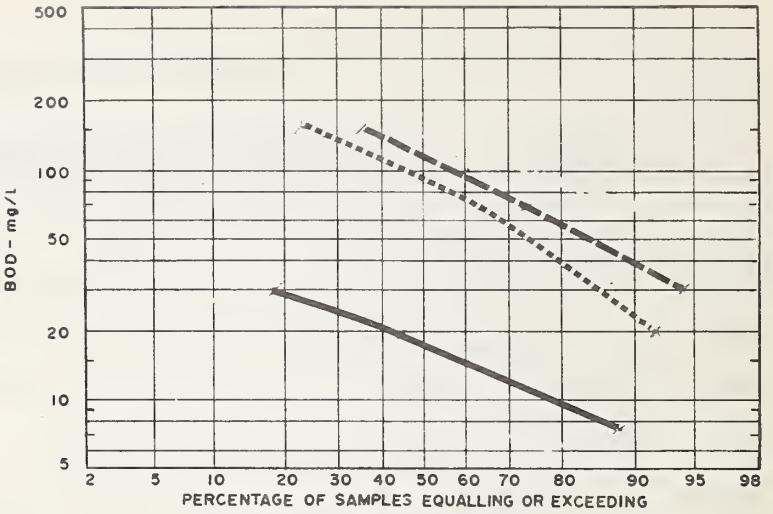


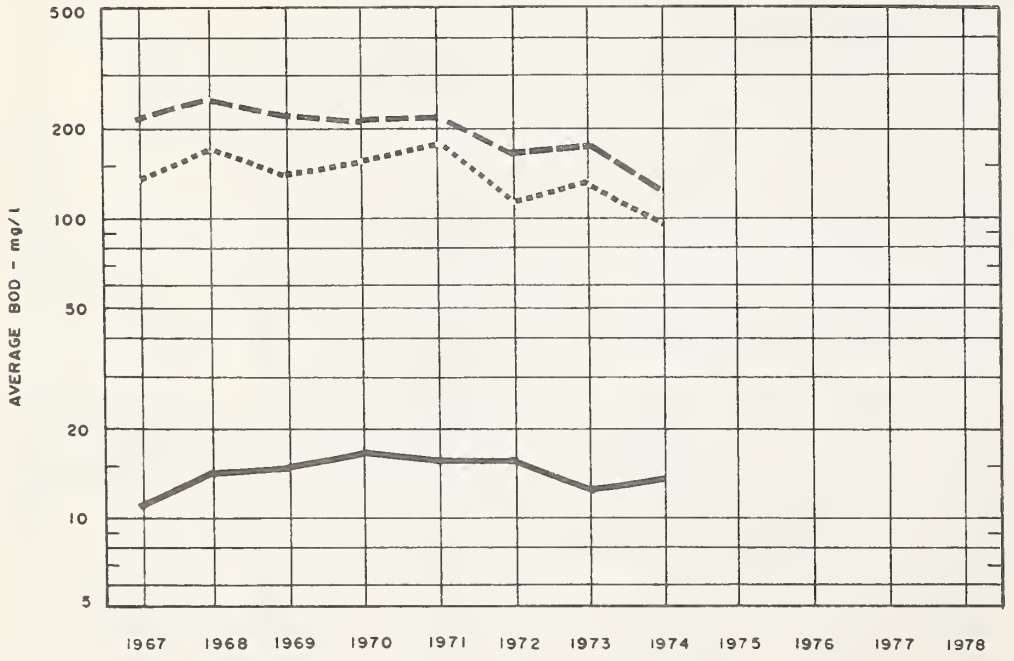
DESIGN CAPACITY _ _ _ _ _ _ _ _

PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	%	10^3 pounds	mg/l	mg/l	%	10^3 pounds	mg/l P	mg/l P
JAN	46.5	1.50	2.36	120	32	73	40.9	153	13	92	65.1	6.4	5.3
FEB	39.8	1.42	1.99	165	30	82	53.7	274	14	95	103.5	6.8	4.2
MAR	58.1	1.88	2.46	42	10	76	18.6	168	14	92	89.5	2.7	
APR	56.9	1.90	2.39	95	6	94	50.6	165	14	92	87.0	6.1	3.4
MAY	44.3	1.43	2.18	140	13	91	56.3	210	15	93	86.4	6.0	3.8
JUNE	49.0	1.63	3.80	150	25	83	61.3	180	17	91	79.9	12.0	
JULY	45.4	1.46	1.86										
AUG	46.7	1.51	1.89	105	10	90	44.4	283	29	90	118.6	7.2	2.6
SEPT	47.7	1.59	2.01	110	28	75	39.1	172	15	91	74.9	6.0	2.2
OCT	46.6	1.50	1.87	60	9	85	23.8	585	25	98	261.0	8.5	3.1
NOV	51.1	1.70	2.53	155	10	94	74.1	251	18	93	119.1	8.1	5.7
DEC	49.4	1.59	2.04	180	29	84	74.6	222	89	60	65.7	6.7	5.4
TOTAL	581.5	-	-	-	-	-	604.8	-	-	-	1192.1	-	-
AVG.	48.5	1.59	MAXIMUM 3.80	122	18	85	55.0	231	26	89	108.4	7.4	4.3
No. of Samples	-	-	-	16	15	-	-	36	31	-	-	15	11

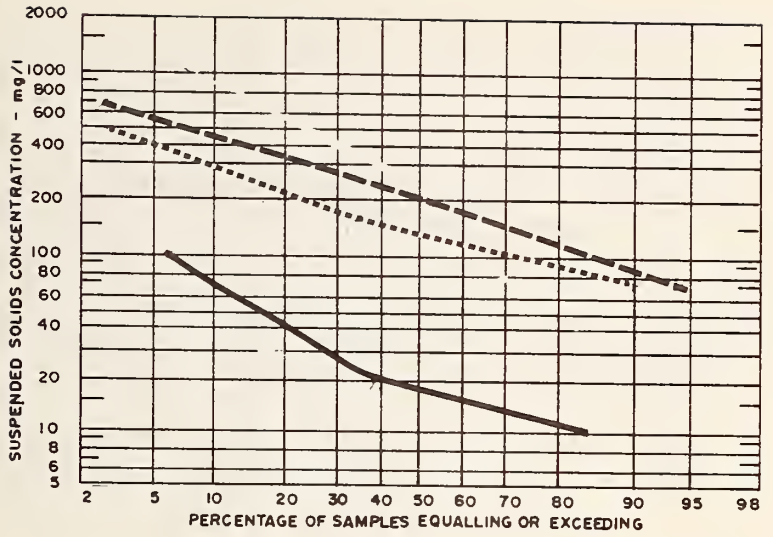
BIOCHEMICAL OXYGEN DEMAND

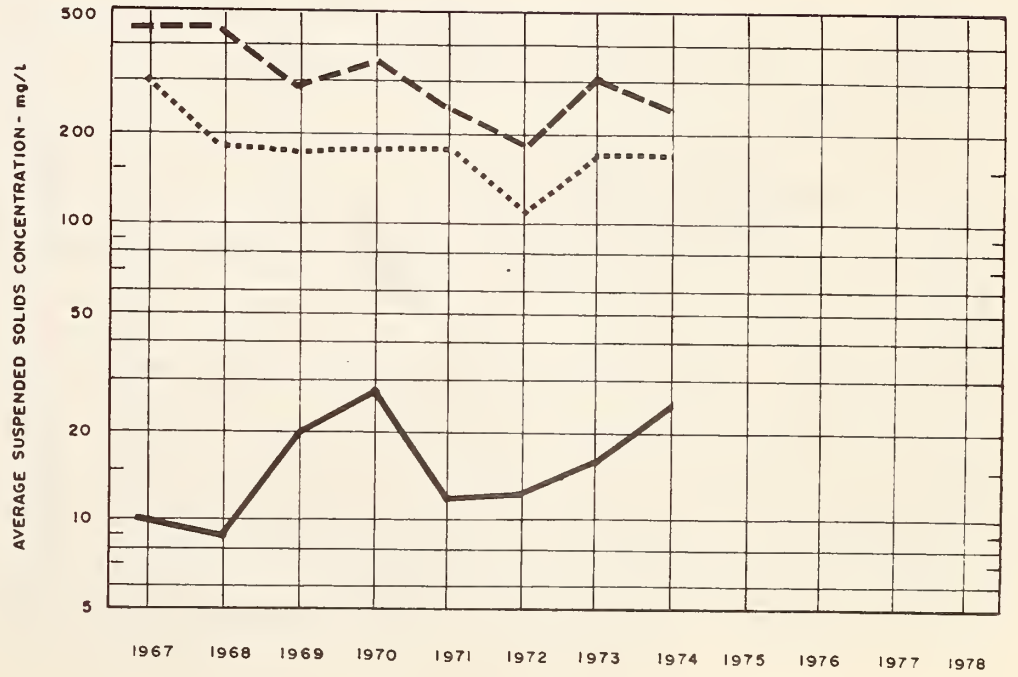




PLANT INFLUENT
PRIMARY EFFLUENT
PLANT EFFLUENT

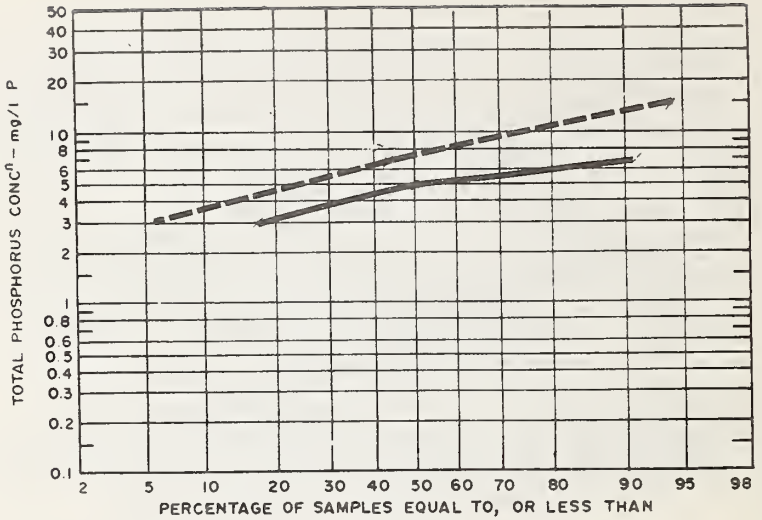
SUSPENDED SOLIDS

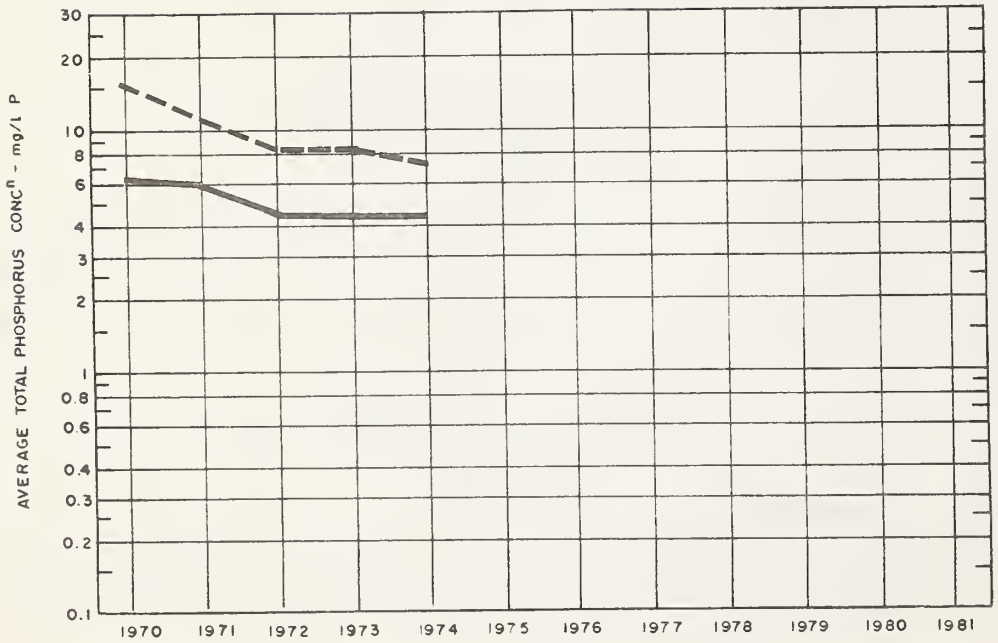




PLANT INFLUENT
PRIMARY EFFLUENT
PLANT EFFLUENT

PHOSPHORUS





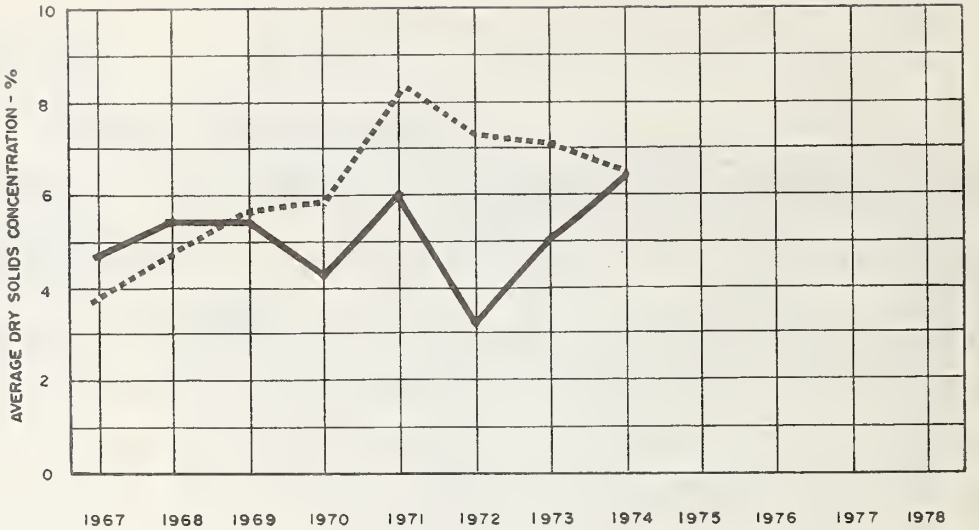
PLANT INFLUENT

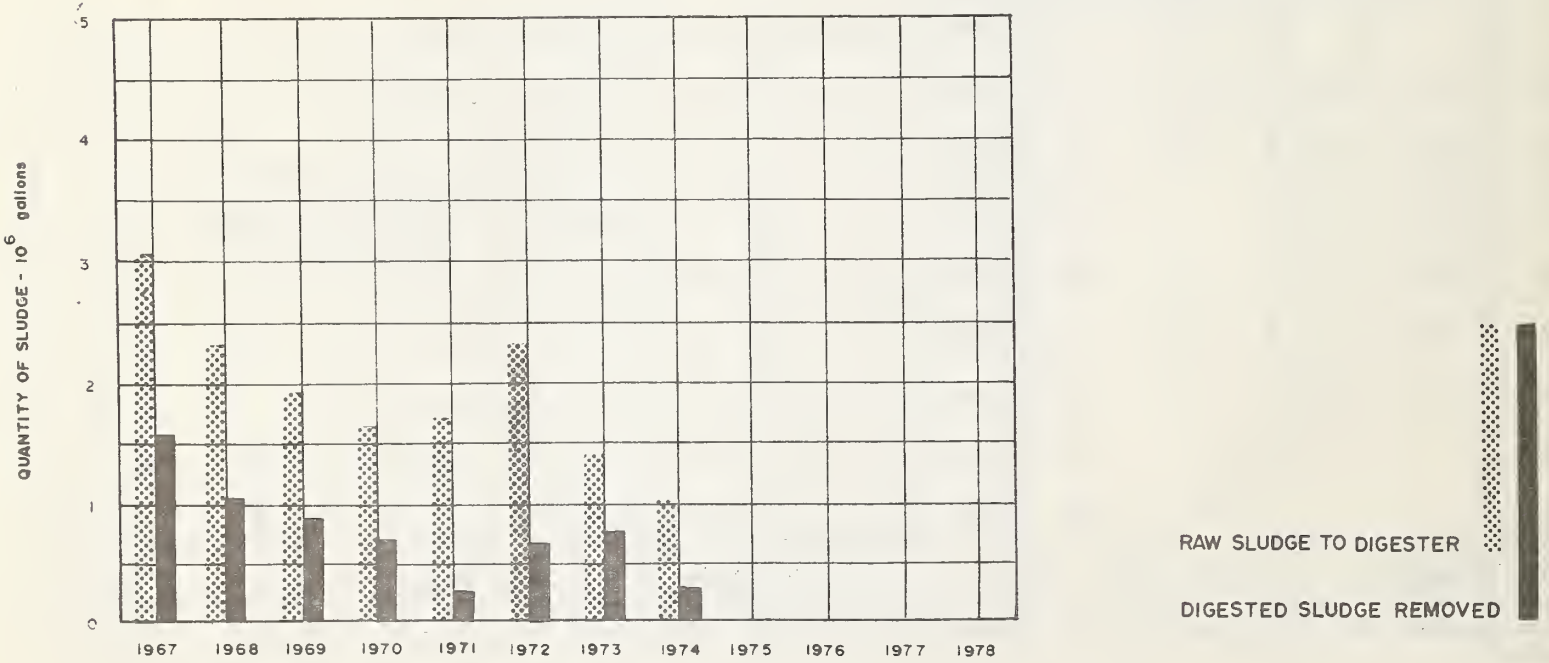
PLANT EFFLUENT

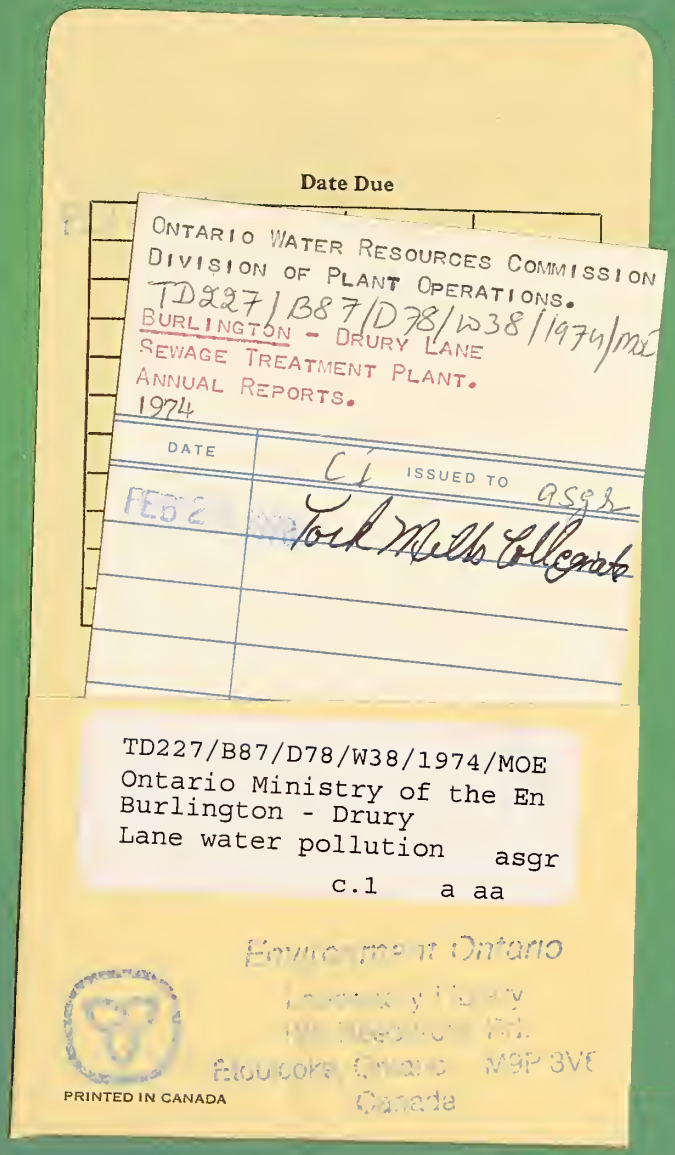
TREATMENT DATA

MONTH	GRIT	CHLORINATION		PRIMARY EFFLUENT		AERATION			SLUDGE DIGESTION and DISPOSAL							
									RAW SLUDGE			DIGESTED SLUDGE			SUPER-	
	QUANTITY REMOVED cubic feet	Cl_2 USED pounds	AVG. DOSE mg/l	BOD mg/l	SUSPENDED SOLIDS mg/l	MLSS CONC mg/l	F/M day^{-1}	AIR $\frac{1000\ ft^3}{lb\ BOD}$	QUANTITY 10^3 gallons	TOTAL SOLIDS %	VOL. SOLIDS %	QUANTITY 10^3 gallons	TOTAL SOLIDS %	VOL. SOLIDS %	NATANT T. S. %	AMOUNT HAULED cubic yards
JAN	26			100	193	2500	.08	2.1	104.3	5.2	73	37.1				220
FEB	24			130	158	2500	.09	1.3	122.2	7.8	59	11.7	3.8			69
MAR	42			32	147	2000	.04	5.2	97.9	4.5	74	8.2	5.2	47		49
APR	24			130	153	2200	.14	1.0	86.5	4.9	75	45.0	3.7	51		267
MAY	23	417	2.4	150	170	1900	.14	1.1	108.1	6.6	80	36.9	6.6	60		219
JUNE	58	1482	3.0	70	97	1800	.08	3.0	57.4	4.3	75	4.1	6.1	56	.3	24
JULY	28	1201	2.6		30	2100			77.8	6.3	70	18.9	5.8	52		112
AUG	79	1120	2.7	36	105	2100	.03	1.7	67.6	10.9	40	23.0	7.9	46		137
SEPT	23	810	1.7	85	183	2100	.08	.3	69.4	6.6	83	21.3	9.8	50		126
OCT	15	600	2.4	38	395	2400	.03	8.0	77.2	6.2	79	76.7	7.5			455
NOV	22			150	150	1900	.16	1.3	76.9	8.1	83	8.2	7.9	50		49
DEC	14			160	181	2000	.15	1.3	68.5	5.9	63	8.2	6.3	61		49
TOTAL	609	5630	–	–	–	–	–	–	1013.8	–	–	299.3	–	–	–	1776
AVG.	1.04 cu. ft/mil gal	938	2.4	98	164	2100	.09	2.4	84.5	6.4	71	24.9	6.4	53		148

DIGESTION


AVERAGE DRY SOLIDS CONCENTRATION - %
10
8
6
4
2
0
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
RAW SLUDGE
DIGESTED SLUDGE


QUANTITY OF SLUDGE - 10^6 gallons
5
4
3
2
1
0
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
RAW SLUDGE TO DIGESTER
DIGESTED SLUDGE REMOVED



Date Due

ONTARIO WATER RESOURCES COMMISSION
DIVISION OF PLANT OPERATIONS.
TD227/B87/D78/W38/1974/MOE
BURLINGTON - DRURY LANE
SEWAGE TREATMENT PLANT.
ANNUAL REPORTS.
1974

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